


Selenium Sources and Control Measures in the Upper Basin



March 16, 2005

Presentations Overview

- ◆ **Introduction**
- ◆ **Summary of USGS Studies and Actions**
- ◆ **Upper Basin Selenium Source Control Analysis**
- ◆ **USBR Treatment Experience (ABMet® Treatment Technology)**

Introduction

◆ **Water and soils in the West can have high Selenium**

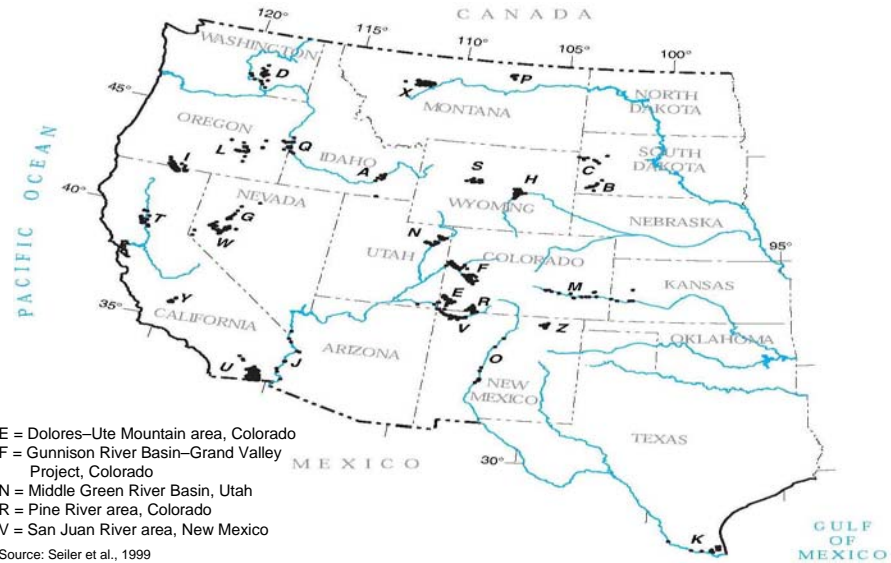
- ⌘ Derived from soil's parent rock
- ⌘ Mobilized by:
 - ❖ Irrigation practices
 - ❖ Natural rainfall-runoff
 - ❖ Anthropogenic point sources
- ⌘ Transported downstream

Introduction (con't)

◆ **National Irrigation Water Quality Program identified 26 areas where irrigation drainage resulted in selenium contamination in the West**

- ⌘ Seven areas in the Colorado River drainage
- ⌘ Five in Upper Basin
 - ❖ Middle Green River Basin, UT
 - ❖ Dolores-Ute Mountain area, CO
 - ❖ Gunnison River Basin – Grand Valley Project, CO
 - ❖ Pine River area, CO
 - ❖ San Juan River area, NM
- ⌘ Two in Lower Basin
 - ❖ Lower Colorado River valley, CA-AZ
 - ❖ Salton Sea area, CA


Areas of Selenium contamination



Summary of USGS Studies and Actions

Paul Vonguerard
United States Geological Survey

Upper Basin Selenium Source Control Analysis

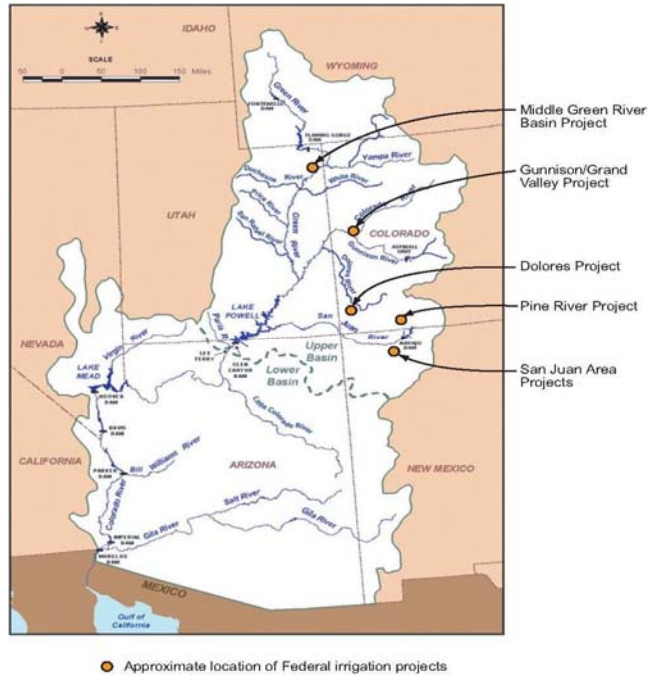


Rob Thomson

Summary of Upper Basin Selenium Control Report

- ◆ **Identify extent of selenium loading in the Upper Basin**
- ◆ **Identify control measures that are being implemented**
 - ⌘ Structural
 - ⌘ Non-structural
 - ⌘ Administrative
- ◆ **Identify load reduction options and prepare cost estimates**
- ◆ **Prepare report summarizing the findings**

Upper Basin Sites



Upper Basin Sites - Loading to Colorado River at Lake Powell

Source	Percent Load
Gunnison River, CO	31.0
Grand Valley, CO	30.3
Middle Green River, UT	20.8
San Juan River, NM	7.8
Colorado River above Grand Valley and Gunnison Confluence, CO	3.5
Dolores River, CO	2.8
Other Tributaries to the Green River	3.8
Total	100

Upper Basin Sites

◆ **Gunnison River and Grand Valley**

◆ **Middle Green River Basin**

⌘ Stewart Lake

- ❖ Majority from irrigation drainage

⌘ Ashley Creek

- ❖ Vernal sewage lagoons

◆ **Dolores River**

⌘ Majority from irrigation drainage

◆ **San Juan River**

⌘ Majority from irrigation drainage

Control Measures Currently Being Implemented

◆ **Structural Measures**

⌘ Lateral Piping

⌘ Polyacrylamide (PAM)

⌘ Pond Lining

⌘ Phyto-remediation

◆ **Non-Structural Measures**

⌘ Land Retirement

⌘ Water Use Practices

⌘ Best Management Practices

Control Measures (con't)

◆ **Administrative Measures**

- ⌘ TMDLs
- ⌘ Effluent Trading
- ⌘ Outreach and Education

Report Will Identify Load Reduction Options

◆ **Options that could be implemented to reduce the selenium load from the Upper Basin**

- ⌘ For all sources
- ⌘ Local and sub-regional

◆ **Cost estimates**

- ⌘ Capital costs
- ⌘ Operations and maintenance